SYBASE®

Quick Installation Guide

Adaptive Server Enterprise

12.5.x

Mac OS X

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About This Book

This guide, *Installation Guide Sybase Adaptive Server Enterprise*, provides:

- An overview of the Sybase® Adaptive Server™ Enterprise installation infrastructure
- Instructions for installing and upgrading Adaptive Server, and installing Backup Server™, Monitor Server, XP Server™, jConnect™ for JDBC™, Java utilities, and client products, including the Adaptive Server plug-in for Sybase Central™
- Instructions for installing optional Adaptive Server functionality, such as auditing, and sample databases, and localization information

Audience

This guide is written for Sybase System Administrators and other qualified personnel who are familiar with their system's environment, networks, disk resources, and media devices.

Related documents

The following documents comprise the Sybase Adaptive Server Enterprise documentation:

- The release bulletin for your platform – contains last-minute information that was too late to be included in the books.

  A more recent version of the release bulletin may be available on the World Wide Web. To check for critical product or document information that was added after the release of the product CD, use the Sybase Technical Library.
- The *Installation Guide* for your platform (this book)– describes installation, upgrade, and configuration procedures for all Adaptive Server and related Sybase products.
- *Configuring Adaptive Server Enterprise* for your platform – provides instructions for performing specific configuration tasks for Adaptive Server.
- *What's New in Adaptive Server Enterprise?* – describes the new features in Adaptive Server version 12.5, the system changes added to support those features, and the changes that may affect your existing applications.

- *Transact-SQL User's Guide* – documents Transact-SQL, Sybase's enhanced version of the relational database language. This manual serves as a textbook for beginning users of the database management system. This manual also contains descriptions of the `pubs2` and `pubs3` sample databases.
- *System Administration Guide* – provides in-depth information about administering servers and databases. This manual includes instructions and guidelines for managing physical resources, security, user and system databases, and specifying character conversion, international language, and sort order settings.
- *Reference Manual* – contains detailed information about all Transact-SQL commands, functions, procedures, and datatypes. This manual also contains a list of the Transact-SQL reserved words and definitions of system tables.
- *Performance and Tuning Guide* – explains how to tune Adaptive Server for maximum performance. This manual includes information about database design issues that affect performance, query optimization, how to tune Adaptive Server for very large databases, disk and cache issues, and the effects of locking and cursors on performance.
- The *Utility Guide* – documents the Adaptive Server utility programs, such as `isql` and `bcp`, which are executed at the operating-system level.
- The *Quick Reference Guide* – provides a comprehensive listing of the names and syntax for commands, functions, system procedures, extended system procedures, datatypes, and utilities in a pocket-sized book. Available only in print.
- The *System Tables Diagram* – illustrates system tables and their entity relationships in a poster format. Available only in print.
- *Error Messages and Troubleshooting Guide* – explains how to resolve frequently occurring error messages and describes solutions to system problems frequently encountered by users.
- *Component Integration Services User's Guide* – explains how to use the Adaptive Server Component Integration Services feature to connect remote Sybase and non-Sybase databases.
- *Java in Adaptive Server Enterprise* – describes how to install and use Java classes as datatypes, functions, and stored procedures in the Adaptive Server database.

- *Using Sybase Failover in a High Availability System* – provides instructions for using Sybase's Failover to configure an Adaptive Server as a companion server in a high availability system.
- *Using Adaptive Server Distributed Transaction Management Features* – explains how to configure, use, and troubleshoot Adaptive Server DTM features in distributed transaction processing environments.
- *EJB Server User's Guide* – explains how to use EJB Server to deploy and execute Enterprise JavaBeans in Adaptive Server.
- *XA Interface Integration Guide for CICS, Encina, and TUXEDO* – provides instructions for using Sybase's DTM XA interface with X/Open XA transaction managers.
- *Glossary* – defines technical terms used in the Adaptive Server documentation.
- *Sybase jConnect for JDBC Programmer's Reference* – describes jConnect for JDBC and explains how to use it to access data stored in relational database management systems.
- *Full-Text Search Specialty Data Store User's Guide* – describes how to use the Full-Text Search feature with Verity to search Adaptive Server Enterprise data.
- *Historical Server User's Guide* – describes how to use Historical Server to obtain performance information Adaptive Server.
- *Monitor Server User's Guide* – describes how to use Monitor Server to obtain performance statistics from Adaptive Server.
- *Monitor Client Library Programmer's Guide* – describes how to write Monitor Client Library applications that access Adaptive Server performance data.

Other sources of information

Use the Sybase Technical Library CD and the Technical Library Product Manuals Web site to learn more about your product:

- Technical Library CD contains product manuals and is included with your software. The DynaText browser (downloadable from Product Manuals at http://www.sybase.com/detail/1,6904,1010663,00.html) allows you to access technical information about your product in an easy-to-use format.

  Refer to the *Technical Library Installation Guide* in your documentation package for instructions on installing and starting the Technical Library.

- The Technical Library Product Manuals Web site is an HTML version of the Technical Library CD that you can access using a standard Web browser. In addition to product manuals, you will find links to the Technical Documents Web site (formerly known as Tech Info Library), the Solved Cases page, and Sybase/Powersoft newsgroups.

  To access the Technical Library Product Manuals Web site, go to Product Manuals at http://www.sybase.com/support/manuals/.

Sybase certifications on the Web

Technical documentation at the Sybase Web site is updated frequently.

❖ **For the latest information on product certifications**

1. Point your Web browser to Technical Documents at http://www.sybase.com/support/techdocs/.
2. Select Products from the navigation bar on the left.
3. Select a product name from the product list.
4. Select the Certification Report filter, specify a time frame, and click Go.
5. Click a Certification Report title to display the report.

❖ **For the latest information on EBFs and Updates**

1. Point your Web browser to Technical Documents at http://www.sybase.com/support/techdocs/.
2. Select EBFs/Updates. Enter user name and password information, if prompted (for existing Web accounts) or create a new account (a free service).
3. Specify a time frame and click Go.
4. Select a product.
5. Click an EBF/Update title to display the report.

❖ **To create a personalized view of the Sybase Web site (including support pages)**

Set up a MySybase profile. MySybase is a free service that allows you to create a personalized view of Sybase Web pages.

1. Point your Web browser to Technical Documents at http://www.sybase.com/support/techdocs/
2. Click MySybase and create a MySybase profile.

Conventions

The following style conventions are used in this manual:

- In a sample screen display, commands you should enter exactly as shown are given in:

  ```
  this font
  ```

- In a sample screen display, words that you should replace with the appropriate value for your installation are shown in:

  ```
  this font
  ```

- In the regular text of this document, the names of files and directories appear in this font:

  /usr/u/sybase

- The names of programs, utilities, procedures, and commands appear in this font:

  sqlupgrade

Table 1 shows the conventions for syntax statements in this manual.

Table 1: SQL syntax conventions

Key	Definition
command	Command names, command option names, utility names, utility flags, and other keywords are in bold.
variable	Variables, or words that stand for values that you fill in, are in *italic*.
{ }	Curly braces indicate that you choose at least one of the enclosed options. Do not include braces in your option.
[ ]	Brackets mean choosing one or more of the enclosed options is optional. Do not include brackets in your option.
( )	Parentheses are to be typed as part of the command.
|	The vertical bar means you can select only one of the options shown.
,	The comma means you can choose as many of the options shown as you like, separating your choices with commas to be typed as part of the command.

If you need help

Each Sybase installation that has purchased a support contract has one or more designated people who are authorized to contact Sybase Technical Support. If you cannot resolve a problem using the manuals or online help, please have the designated person contact Sybase Technical Support or the Sybase subsidiary in your area.

CHAPTER 1

Installing Adaptive Server

This documentation describes the steps to install Adaptive Server on Mac OS X, and contains brief descriptions of some of the content of this release.

This release is supported via a newsgroup, as well as through the terms in your purchase agreement. You can reach the newsgroup at news://forums.sybase.com/sybase.public.macosx.

System requirements

The Apple computer you use to install this software must be configured as follows:

- Operating system – OS X 10.2 or higher (Client or Server).
- Computer – Any system that can run Macintosh OS X 10.2, including iBook, iMac, PowerBook, PowerMac, and Xserve.
- Memory – 256MB, minimum.
- Hard disk – At least 700MB of available disk space.

Preinstallation system setup

The following items are predetermined by the installer:

- Installation directory – */Applications/Sybase*
- Hostname – *yourhost* (obtained dynamically via ‘hostname -s’)
- Adaptive Server name, port number – *hostname*_ASE, 11222
- Backup Server name, port number – *hostname*_BACKUP, 11223
- XP Server name, port number – *hostname*_XP, 11224

- master device pathname – */Applications/Sybase/System/devices/master.dat*
- master device size – 100MB
- sybsystemprocs device pathname – */Applications/Sybase/System/devices/sybprocs.dat*
- sybsystemprocs device size – 160MB
- Server page size – 4096 bytes
- Server default character set – iso_1

Upgrading from the early adopter release

Upgrading from the Early Adopter release is not supported. If you have data that you wish to save contained in the Early Adopter release, back it up using bcp out. Then, uninstall the Early Adopter release as described in the *Release Notes* for that version.

Network setup

Before proceeding with the installation, make sure your system is using a resolvable host name for its network connection. Your machine is known to TCP/IP by the name returned by the shell command 'hostname -s'. You must be able to successfully execute a ping command to this name. From a terminal window, execute:

```
% ping 'hostname -s'
```

When you configure your machine's name, be sure that there are no dashes in the name; Adaptive Server cannot use dashes in object names.

If this does not succeed, use NetInfo to configure a resolved host name on your system manually:

1 Start NetInfo Manager in */Applications/Utilities*by double-clicking on its icon from a Finder window.

2 Duplicate the *localhost* entry and give it the name of your machine.

To do this:

- Click the authentication icon to get system administrator status.

- Click *localhost* under the *machines* directory.
- Choose Duplicate.
- Click on *localhost* copy under values and change it to your machine's name.
- Apply the changes.

3 Test the update by executing:

```
ping 'hostname -s'
```

Installing from a CD

If you are installing from a CD, insert the CD into the drive, and when it becomes visible on your desktop, double-click the icon. A Finder window appears, showing the contents of the CD. Double-click the *Sybase_ASE_12502* package, and the installer begins. Follow the steps described in the next sections to complete the installation process.

If you intend to install on a headless system, you must make this package visible to that system. You can use the Finder to copy the package to a location that is visible to the headless system (NFS-mounted file system), and then review "Installation on Xserve" on page 10.

Downloading the software

1 The Sybase Web site is located at http://www.sybase.com/mac.

2 Select the Download Now button. You are asked to answer a few questions and provide registration information. You will be downloading the Devloper's Edition, which is free, and only takes a few minutes. The download file is an OS X disk image (*.dmg*), which allows it to be mounted on your desktop as a new volume.

3 Using a browser, go to the Web site and download the disk image to your desktop. For some browsers, downloading a disk image also causes the disk image to be mounted automatically. If this does not happen with your browser when the download is complete, double-click on the disk image. The Finder will mount the image as a new file system volume, named Sybase_ASE_12502.

4 Double-click the Volume icon; its contents appear in a separate window. The installation package should appear in that window. Double-click the Package icon to automatically start the OS X installer. For installing on headless systems, such as an Xserve system, see “Installation on Xserve” on page 10.

The installer walks you through the various stages of the installation process, requiring your input after most of them. If you intend to install on a headless system, insert the CD into the Xserver, and see the section “Installation on Xserve” on page 10.

Installation

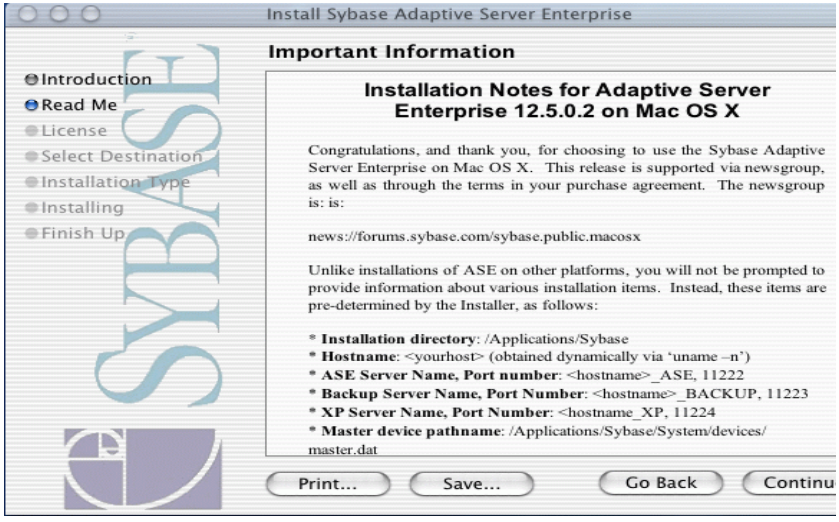
This section describes the steps required to install Adaptive Server on Mac OS X.

1 Figure 1-1shows the Introduction page, which identifies this package as the Sybase Adaptive Server. To move to the next page, click Continue.

Figure 1-1: Introduction page

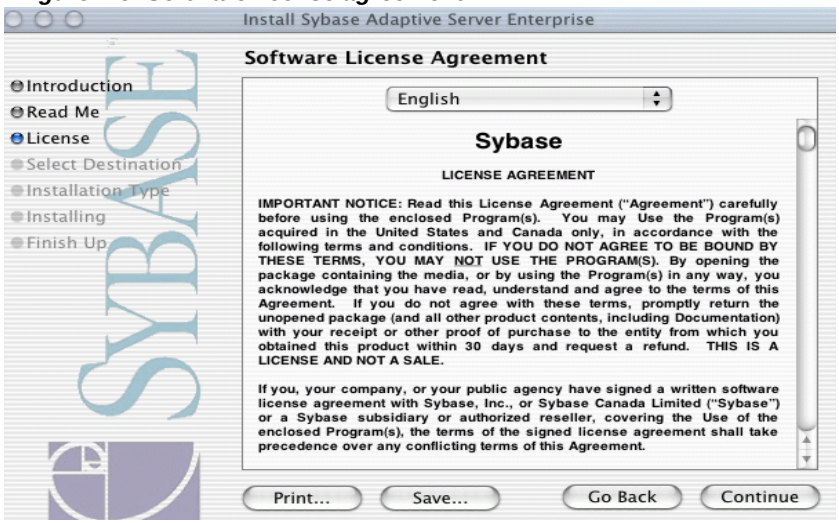
2 You see the Read Me notes, which you can print, save, or read by using the scroll bar on the right. These notes are important, and Sybase recommends that you make a hard copy of these notes by clicking the Print button. Select Continue when finished.

Figure 1-2: Read me notes



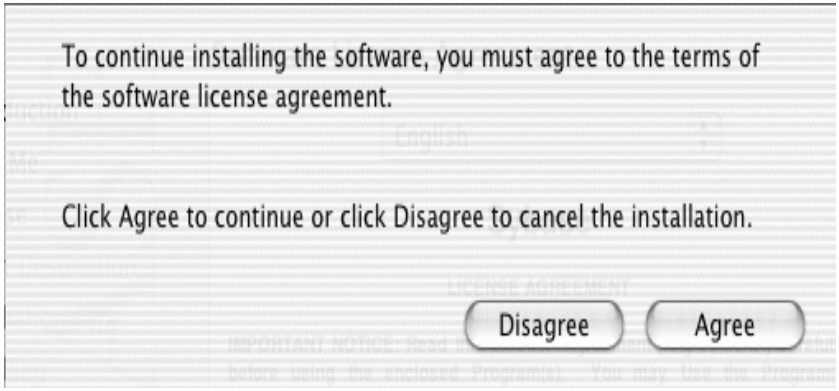
3 The next window displays the software license agreement. View the terms and conditions of the agreement, then click Continue.

Figure 1-3: Software license agreement



4 To continue with the installation, click Agree to accept the terms of the license agreement. If you select Disagree, the installer reverts to the previous window.

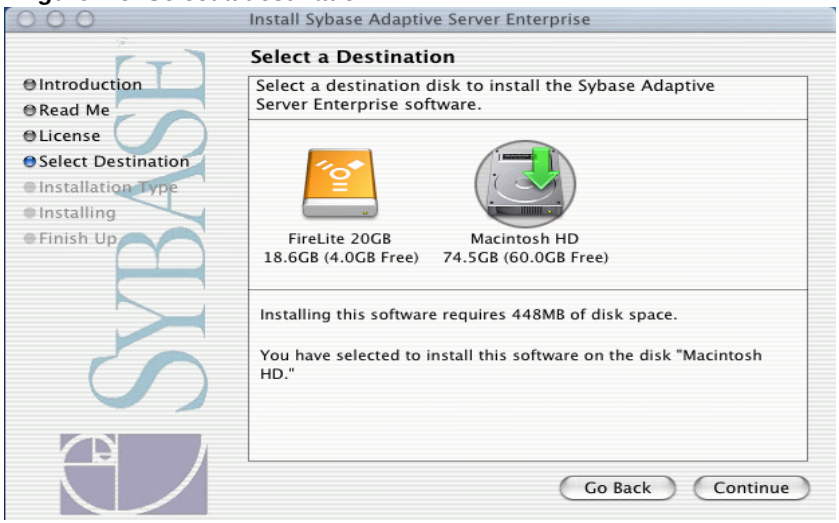
Figure 1-4: Accepting the software license agreement



5 From the next window, select Macintosh HD (which may vary on some machines.) This is the required boot device. Click continue.

This page informs you of the amount of disk space that is needed to contain the actual installation files. This is only the amount of space necessary to transfer files from the installation package onto the volume you have selected. Before the installer completes, you need at least 260MB of disk space for databases and related storage requirements.

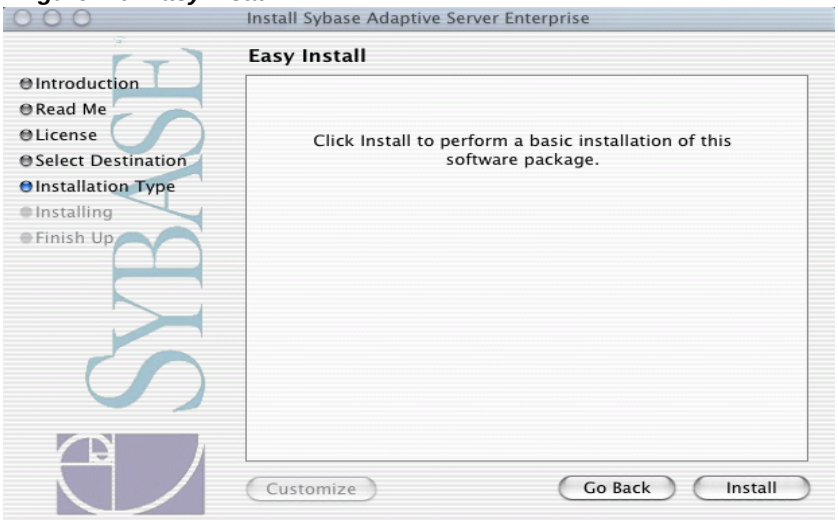
Figure 1-5: Select a destination



6 Click Install to proceed. If you try to install this package a second time, this button changes to Upgrade. If you click Upgrade, the software is copied from the package into the release location at */Applications/Sybase*, but no server is initialized and started.

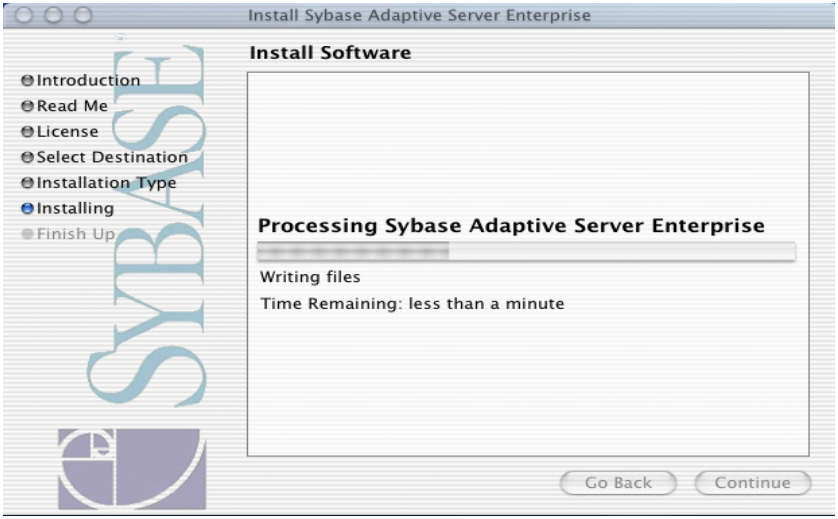
To stop the installation at this point, select Go Back to stop the installater. From a terminal window, go to */Applications/Sybase/System/Install* and execute the *uninstall* shell script as described in “Uninstalling Sybase software” on page 32. Then, re-run the installer.

Figure 1-6: Easy install



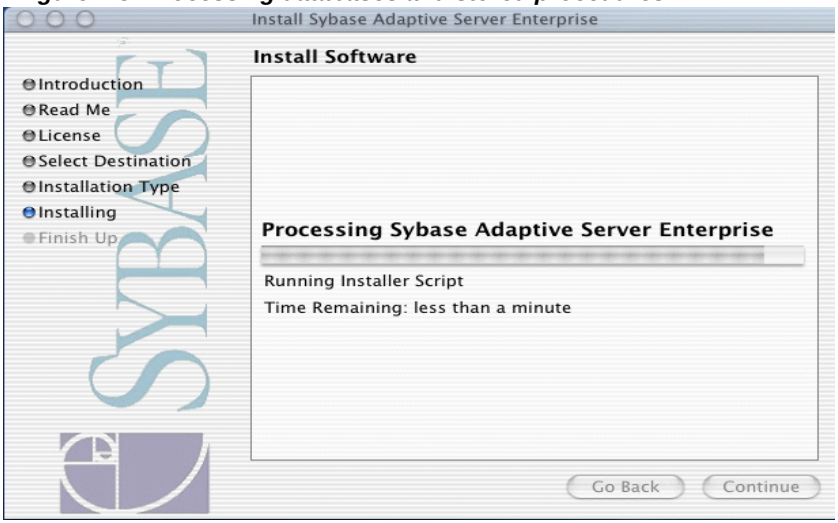
7 The installer now performs a series of tasks, including some preinstallation checks and writing files to the selected disk volume.

Figure 1-7: Processing Adaptive Server



8 The installer is now running Sybase scripts that initialize a database, install Sybase provided stored procedures, and leave the server up and running when complete. This stage can take 5 – 10 minutes.

Figure 1-8: Processing databases and stored procedures



9 You are finished. Sybase Adaptive Server Enterprise is now ready for your use. Click on Close, and the installer exits. A record of the installation has been saved in */Library/Receipts/Sybase_ASE_12502.pkg*.

Figure 1-9: Finishing the installation

Installation on Xserve

To install Adaptive Server on Xserve running in a “headless” mode (without a monitor,) you have two options:

- Use the command line installer. Place the disk image containing the installation package on a disk volume accessible to Xserve. Enter:

  ```
  installer -pkg Sybase_ASE_12502.pkg -target /
  ```

  where the path name to the installation package (*.pkg*) identifies the exact location of the file. The target is the root device (/).

- Use the Apple Remote Desktop. For more information see the Apple Web site at http://www.apple.com/pr/library/2002/mar/14remotedesktop.html.

Release contents

This distribution is provided with a Developer's Edition license that enables single-CPU operation, and restricts the number of concurrent users to 25. All other available features are automatically enabled, and there is no expiration period. To enable usage authorized by your purchase agreement, you must provide license keys using the License Entry application in the */Applications/Sybase* directory.

Besides Adaptive Server Enterprise version 12.5.02, this release provides you with some interactive tools to help you use and configure your database. These tools can be launched from the Finder by double-clicking on their icons, which may also be dragged to the Dock, if desired.

- jISQL – an interactive query tool that enables you to submit SQL statements to the server, and view their results within a window.
- SybaseCentral – allows a database administrator to create tables, databases, users, and so on using an easy-to-use graphical interface.
- Server Build – an interactive graphical configuration utility that allows you to define the parameters of a new server build, and then performs actions necessary to build a new server according to those parameters.
- Sybase Server Discovery – uses Rendezvous technology to display the name and location of all servers running on your network. Each Sybase server registers itself with Rendezvous when it starts, and Sybase Server Discovery shows you where each of these servers is located. Also, the Configuration option allows you to automatically generate and update entries in the interfaces file, for each server selected in the list.
- License Entry – allows you to enter information about your purchased software, and generates a software license key for you.
- sybmigrate – allows you to move schema and data from one Adaptive Server version 12.5.0.1 or higher, to another, primarily for the purpose of changing to a server that uses a different page size.

The following Adaptive Server features are also provided with this release:

- Server license (Developer's Edition)
- Java/XML in Adaptive Server
- External file system
- Component Integration Services
- Row level access control

- Backup Server
- XP Server
- ODBC driver from Open Link Software, Inc.

Features not yet available

Some of the JAdaptive Server features provided for other UNIX platforms are not available yet on Mac OS X, including:

- EJB Server
- SSL support
- LDAP support
- ASE Replicator (newly introduced in Adaptive Server 12.5.0.1 on other platforms)
- High availability
- Full-Text Search
- Historical Server
- Monitor Server
- DTM

Post-installation tasks

At the end of the installation process, you have a minimally configured Adaptive Server. There are additional post-installation tasks you must complete to administer Adaptive Server and install stored procedures and sample databases. For more information see the *Configuration Guide* for UNIX platforms.

Post-installation topics

- Entering license keys
- Setting up environment variables

- Viewing servers running on your network
- Verifying that you can connect to servers
- Connecting to Adaptive Server via Sybase Central
- Setting the System Administrator password
- Starting and stopping Adaptive Server
- Reinitializing Adaptive Server
- Installing sample databases
- Installing online help for Transact-SQL syntax
- Starting Sybase XP Server
- Starting Sybase services automatically

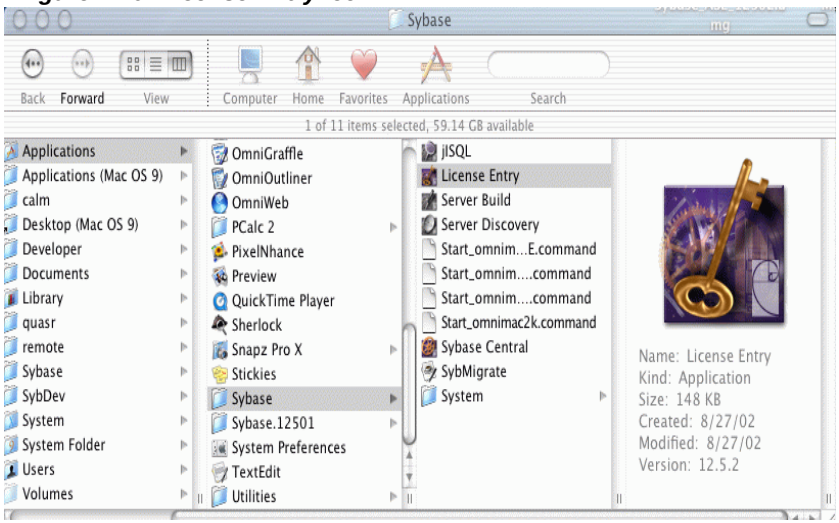
Entering license keys

If you have downloaded Adaptive Server from the Web or purchased a copy of the Developer's Edition of Adaptive Server, you do not need to use the license entry application. There is no need to enter any license key and you do not need to start up the license daemon software (referred to as SySAM).

If you have purchased the Adaptive Server software with either an Enterprise or Small Business Edition license then you must follow the steps below to set up the license information.

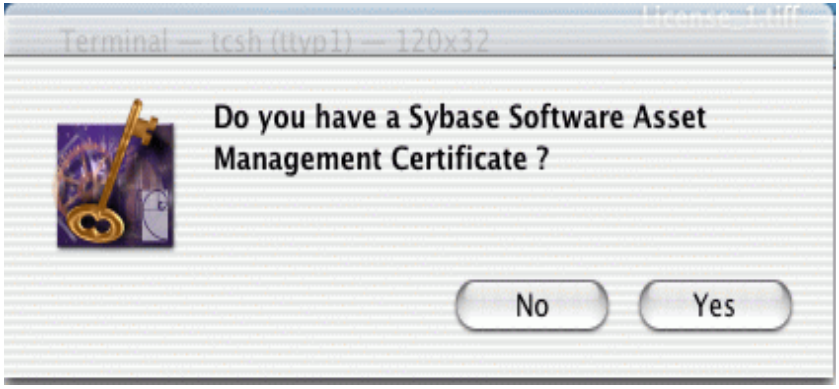
1 In the Finder, double-click License Entry.

Figure 1-10: License Entry icon



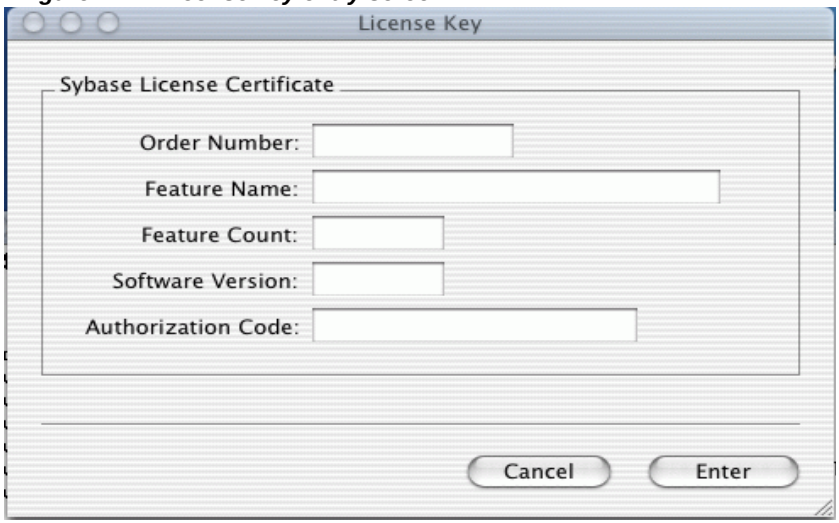
2 You are asked whether you have a Sybase Software Asset Management Certificate. You should have the printed certificate(s) in front of you. Click Yes to continue. If you do not have license certificates to enter, click No and proceed to the next section, “Entering Network License Management Information.”

Figure 1-11: Entering a SySAM certificate



3 Enter the information for the primary server license first and click Enter. The Feature Name is either ASE_SERVER or ASE_SBE.

Figure 1-12: License key entry screen



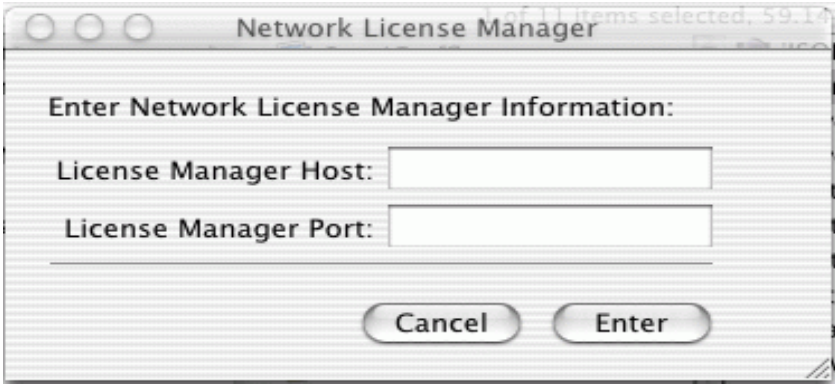
4 You are asked whether or not you ahve additional license certificates to enter. You will have additional certificates if you purchased any optional features. If you have additional certificates click Yes and repeat the previous step to enter the information. When you are finished entering all license certificates select No to complete license entry.

5 Now that the license certificates have been entered start the license daemon. Execute the *startd.sh* script located in */Applications/Sybase/Systems/SYSA-1_0* from the terminal window.

The license daemon needs to be started after the system is restarted.

If you click No, when asked whether you have any Sybase Software Asset Management Certificates to enter, the following screen is displayed.

Figure 1-13: Network license manager



If you are using a network license host to server as a central point to check licenses out, enter the machine name and port number for the Network License Manager license daemon. The default port number is 29722. A simplified license is written out that contains ifnormation to direct Adaptive Server to contact the remote license daemon to check out licenses.

Otherwise select cancel and the License Entry application exits. See "Sybase Software Asset Management" for more details.

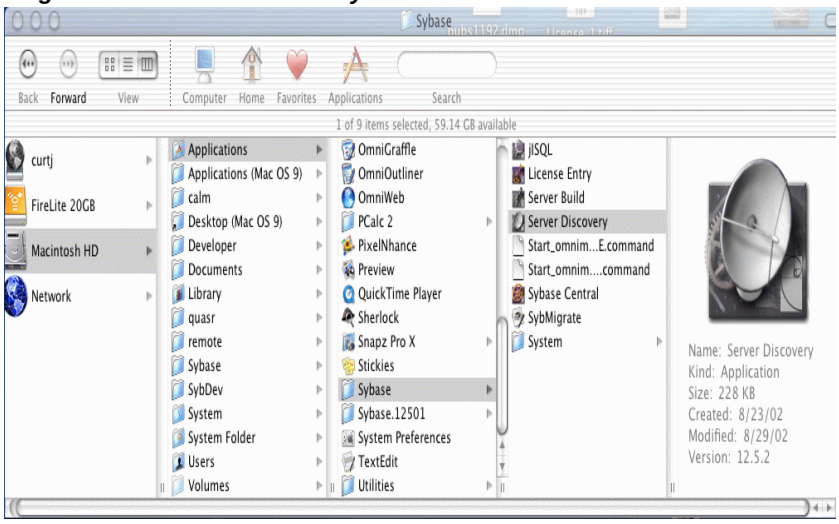
Environment variables

Add entries to your login script (*.login*) so that Sybase environment variables area always set. An example of this is contained in */Applications/Sybase/System/SYBASE.csh*. If you do not have a *.login* script in your home directory, you can use the *.cshrc* file. By default, user accounts do not contain a *.login* or a *.cshrc* script and you must create one. If you do not, the login daemon looks to */etc/csh.login* and */etc/csh.cshrc*.

Viewing servers that are running on your network

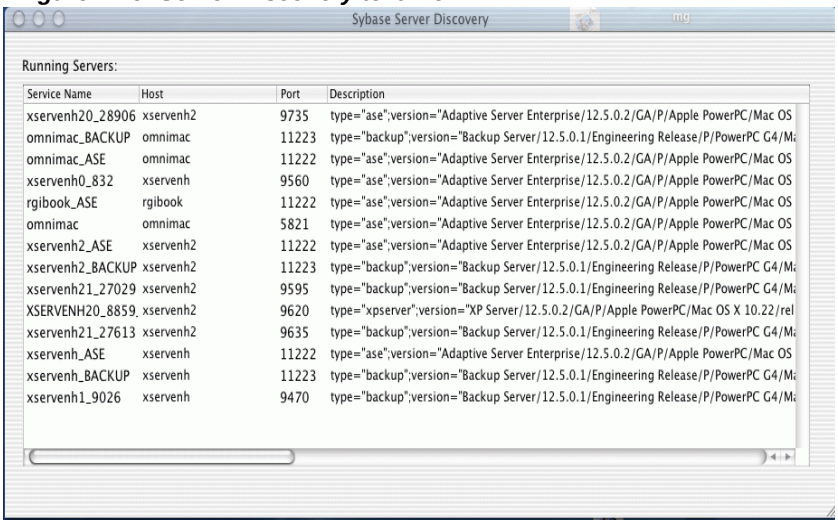
Adaptive Server, along with its associated Backup Server and XP Server, registers with the network using Rendezvous technology, so that any Rendezvous client can discover what services are available. We have provided a service discovery tool for Sybase servers, called Server Discovery. Click Server Discovery from the Finder:

Figure 1-14: Service discovery tool



When you run this application, you see a list of available servers, showing service name, host name, port number, and a text file that contains the server type, version, and process ID:

Figure 1-15: Server Discovery text file



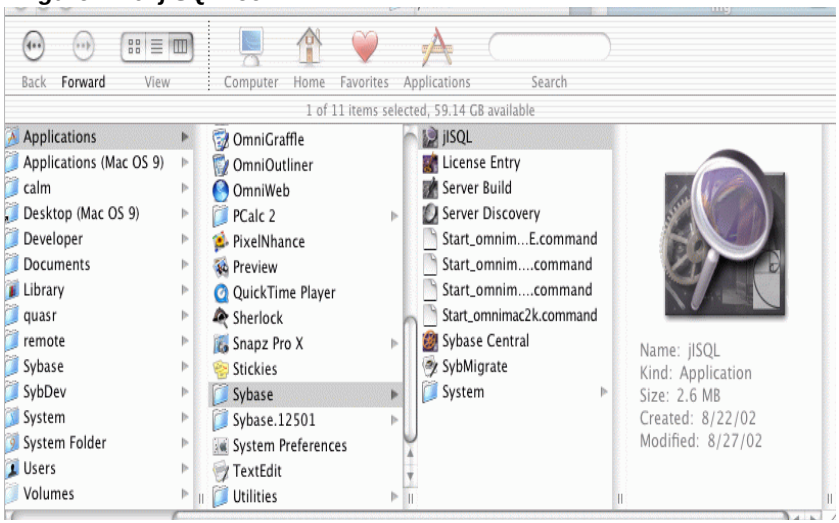
You can use its Configuration menu item to automatically update the Sybase interfaces file for those servers that you have highlighted in the window.

In addition, the sample program *ctos*, in */Applications/Sybase/System/OCS-12_5/sample/srvlibrary*, contains an example of how to register an Open Server™ application with Rendezvous, that can be detected by Server Discovery.

Verifying that you can connect to servers

To verify that the newly installed server is accessible, double-click the jISQL icon:

Figure 1-16: jISQL icon



Attempt to connect when you see the login screen:

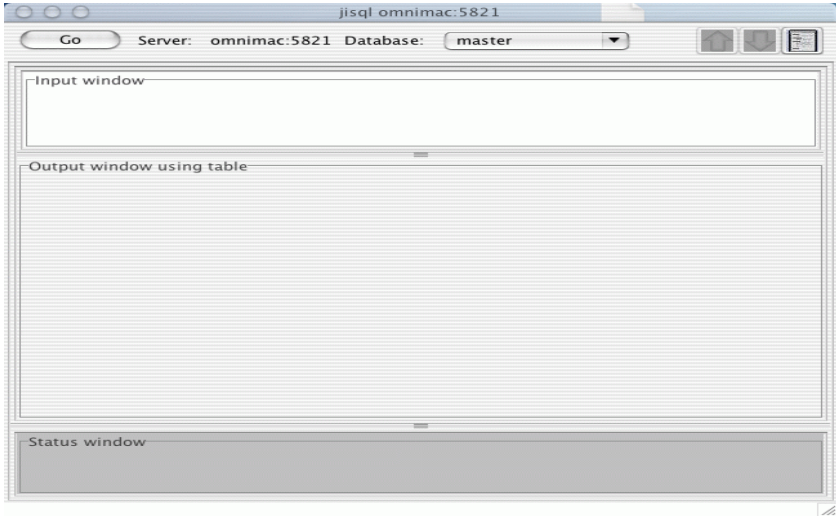
In the login window, enter:

- Username – sa
- Password – leave blank
- Hostname – *servername*_ASE
- Portnumber – 11222

Figure 1-17: jISQL login screen

If you can connect successful, you see a window that looks like this:

Figure 1-18: Post-connection screen



If you see an error message instead of this window, use the Process Viewer or Server Discovery to determine whether or not the server is actually running.

Connecting to Adaptive Server via Sybase Central

Sybase Central provides a graphical user interface for Adaptive Server administrative tasks. Sybase Central displays a hierarchical list of all servers in the left pane and a details list of the selected server in the right pane. To select a server, click on it with the mouse in the left pane.

To start Sybase Central:

1 Double-click the Sybase Central icon from the Finder.

2 Select Tools | Connect, then, from the drop-down list, select the server to which you want to connect.

3 In the Login window, enter the System Administrator's user name and password. You must log in as the System Administrator to perform administrative tasks.

4 Click OK.

Warning! The first time you log in to Adaptive Server, use the default "sa" user name and leave the password blank. After you log in for the first time, change the system administrator's password. See "Setting the System Administrator password" on page 21 for more information.

Sybase Central has online help files. To access the online help for a server, right-click the server icon, and select Online Help from the drop-down list. To access online help for Sybase Central, select Help from the menu bar, then select Sybase Central Help.

Setting the System Administrator password

A user account called "sa" is created for the Sybase System Administrator when you install Sybase software. A user logged in as "sa" can use any database on Adaptive Server, including master, with full privileges. Immediately after a new installation, there is no password on the "sa" account.

The System Administrator should log in to the new Adaptive Server as "sa" and set a password using sp_password.

Connect to the server by double-clicking the jISQL icon in the */Applications/Sybase* folder. Connect to the server, and send this command:

```
sp_password null, new_password
```

where null is the default password and *new_password* is the password that you are assigning to the “sa” account.

Starting and stopping Adaptive Server

Once you have installed the server, you may need to stop it, or to reinitialize it using an alternative disk location. you can stop the server by sending this Transact-SQL command to the server:

```
shutdown [with nowait]
```

You can send this command either by using jISQL, or by executing */Applications/Sybase/System/OCS-12_5/bin/isql*.

You can also stop the server by using this operating system command, although this method is not recommended, as data corruption may occur.

```
sudo kill -9 <pid>
```

where <*pid*> is obtained from another operating system command:

```
ps -ax | grep dataserver
```

Warning! Use the kill command only as a last resort.

Once the server is stopped, you can restart it in one of two ways:

- Open the Terminal window, and execute the startserver command found in */Applications/Sybase/System/ASE-12_5/install*:

  ```
  startserver -f RUN_hostname_SYBASE
  ```

- From the Finder, double-click the *Start_servername.command* file in */Applications/Sybase*. The command file is recognized by the Finder as a shell script.

Rebuilding Adaptive Server

You may need to rebuild the databases created during the install process for the following reasons:

- You want to use an alternative disk device for the database devices, perhaps for faster disks.
- You need to change the size of the pages within the database.

You can rebuild the server in one of two ways:

- Using the *bootstrap* shell script in */Applications/Sybase/System/ASE-12_5/install* – you can edit this script to take action as necessary. The script installs a new server using srvbuildres which is driven by a resource file. You can edit the resource files used by the *bootstrap* script to override default values for the installation.
- Using Server Build – a graphical interface to the srvbuildres utility. Server Build collects input from you and uses it to create resource files used by srvbuildres.

Changing the default character set, sort order or language

Adaptive Server supports a wide variety of character sets are supported and messages can be localized to suit your particular user community. By default, Adaptive Server is installed with a default character set of iso_1 (ISO 8859-1, in ISO terminology), a binary sort order, and U.S. English as the default language.

To display Adaptive Server error messages in a language other than U.S. English (us_english), you must load the appropriate language module.

To change the default character set, sort order, or language, see the complete discussion of the procedure in the *System Administration Guide*. We strongly recommend that you read chapters 7 and 8 in that document. You can find this book online at http://sybooks.sybase.com/asg1250e.html.

A simplified procedure for doing this is described here.

Make all changes to the default character set and sort order for a new Adaptive Server before creating any user databases or making any changes to the Sybase-supplied databases.

Changing the default character set and sort order

You can change the default character set by using the charset utility. You can use this utility only from the UNIX shell, so you must open a Terminal window. The utility is found at */Applications/Sybase/System/ASE-12_5/bin/charset*. To change Adaptive Server's defaults:

1 Run the charset utility to add the character set to Adaptive Server's system catalogues.

2 Execute the sp_configure stored procedure to set the default character set.

3 Restart the server. The server comes up, performs any necessary reconfiguration it needs to do internally, and then shut itself down. You can then restart it.

Note Perform these steps before you add any user data to the Adaptive Server. If your server contains data, follow the procedure outlines in the *System Administration Guide* to save and restore it.

Changing the default language

Client programs may require messages to be delivered in in a language other than U.S. English. If this is the case, run the sp_modifylogin stored procedure to specify which language is preferred. The specified language must first be installed by the System Administrator using the langinstall utility, found in */Applications/Sybase/System/ASE-12_5/bin/langinstall*.

Installing online help for Transact-SQL syntax

This section provides instructions for installing online help for Transact-SQL syntax.

Online syntax help: *sp_syntax*

There is a script for installing the syntax help database, *sybsyntax*. You can retrieve this data with the sp_syntax system procedure. The script is located in *$SYBASE/$SYBASE_ASE/scripts/ins-syn-sql*.

For more information on sp_syntax, see the *Reference Manual*. This script includes syntax information for Transact-SQL, the system procedures, and the Sybase utilities. When you execute this script, you install the SQL portion of the sybsyntax database.

When you first execute this script, it creates the sybsyntax database and the necessary tables and indexes. If you execute the script again, the previously installed rows of information are deleted from the table in the database and then reinstalled.

Default device for the *sybsyntax* database

By default, the *sybsyntax* script installs the sybsyntax database on the device that is designated as the default database device.

If you have not changed the status of the master device (which is installed as the default disk) or specified another default device, the script automatically installs sybsyntax on the master device. Sybase does not recommend this configuration because sybsyntax uses valuable space that is best left available for future expansion of the master database.

To avoid installing sybsyntax on the master device, do one of the following:

- Us sp_diskdefault to specify a default device other than the master device. For information about sp_diskdefault, see the *Reference Manual*.
- Modify each *sybsyntax* installation script that you plan to execute to specify a different device, as explained in the following section.

Installing *sybsyntax*

For each *sybsyntax* installation script you want to execute:

- Determine the device location where you plan to store the sybsyntax database.
- Make a copy of the original script. Be sure you can access this copy, in case you experience problems with the edited script.
- Use a text editor to edit the script, if necessary, to change the default device from the master device to a new default device.
- Comment out the following section, which specifies the default device:

```
/*create the database, if it does not exist */
```

```
/* is the space left on the default database devices
> size of model? */
if (select sum (high-low + 1)from sysdevices
      where status & 1 = 1) - (select sum(size) from
sysusage, sysdevices
             where vstart >= sysdevices.low
                    and vstart <= sysdevices.high
                    and sysdevices.status &1 = 1) >
                        (select sum(sysusages.size)
from sysusages where dbid =
                3
begin
            create database sybsyntax
end
else
begin
      print "There is not enough room on the default
devices to create the sybsyntax database."
       return
end
end
```

- After you have commented out this entire section, add this line to the script:

  ```
  create database sybsyntax on device_name
  ```

  where *device_name* is the name of the device on which you want to install sybsyntax.

- Execute:

  ```
  isql -Usa -Ppassword -Sservername
  -i$SYBASE/$SYBASE_ASE/scripts/ins_syn_sql
  ```

  where *sa* is the user ID of the System Administrator, *password* is the System Administrator's password, and *servername* is the Adaptive Server on which you plan to install the database.

  To ensure that you have installed the sybsyntax database and that it is working correctly, use isql to log in to the server on which you installed the database, and execute sp_syntax. For example:

  ```
  isql -Usa -Ppassword -Sservername
  1> sp_syntax "select"
  2> go
  ```

Adaptive Server displays a list of commands that contain the word or word fragment “select.”

Sybase XP Server

XP Server is automatically installed by the build process. The default name of the XP Server is *hostname*_XP.

Starting Sybase services automatically

By copying some files to the system’s */Library/StartupItems* directory, you can ensure that Sybase services automatically start when your system starts opr restarts. In */Applications/Sybase/System/Install/StartupItems*, more the following directories to */Library/StartupItems* to enable the associated services to automatically start when the system is restarted:

- *SybaseAdaptiveServerEnterprise* – contains files necessary to automatically start Adaptive Server. You may need to edit the shell script in this directory to refer to the correct server name that is to be started.
- *SybaseLicenseManager* – contains scripts necessary to automatically start the license manager daemon.
- *SybaseAgent* – contains scripts necessary to automatically start the Sybase SNMP subagent, which is designed to work with the NetSNMP agent.

These directories contain an executable shell script of the same name as the parent directory, and a property list file. To enable automatic startup of any of these services, copy its directory to */Library/StartupItems*. Each subdirectory of the *StartupItems* directory is examined during the system’s startup sequence, and the services that can be started at that time are launched.

Note Your system may not have the */Library/StartupItems* directory. If not, then you must create it. This and the copy operation should be done in an account that has Admin privileges, by way of the sudo command.

Sybase SNMP subagent

The Sybase SNMP subagent allows SNMP-based network monitoring and error notification for Sybase servers. This subagent features:

- Support for V1, V2c, and V3 SNMP
- Implementation of NETWORK-SERVICES-MIB, RBDMS-MIB, SYBASE-MIB
- Trap generation on server errors via the sp_errornotify remote procedure call
- Support for Adaptive Server and Open Server-based Sybase servers
- JavaSource code distribution for the subagent

Installation

Net-SNMP Master Agent

The sybase SNMP Subagent uses the Agent X protocol for extending the capabilities of a master agent. It works with any master agent that implements the Agent X protocol. Included with this subagent is a distribution of the Net-SNMP master agent. This is a very feature-rich master agent available through the public domain. More information on it can be found at http://www.net-snmp.org. The Sybase subagent was implemented and tested against version 5.0.1 of the Net-SNMP master agent.

Note Mac OS X Server 10.2 ships with version 4.2.3 of the Net-SNMP agent already installed. This version does not work correctly with Agent X extensions. Future releases of OS X may automatically include the newer version of Net-SNMP making its installation unnecessary.

To install the Net-SNMP master agent, see the *Readme.txt* file included in its distribution. Once the Net-SNMP agent is configured and installed, edit */System/Library/StartupItems/SNMP/SNMP* to add the parameter "`-x 705`" which enables the Agent X extension. When you are finished, the file should look like this:

```
#!/bin/sh
##
# Start net-snmp
```

```
##
./etc/rc.common

if ["${SNMPSERVER:=-NO-}" = "-YES-" ]; then
      ConsoleMessage "Starting SNMP server"

      /usr/sbin/snmpd -x 705
      fi
```

Sybase subagent

To install the Sybase SNMP subagent, first edit *snmpagent.cfg* in */Applications/Sybase/System/SNMP-1_0* to include entries for each server that is to be monitored. There is no limit to the number of servers that can be monitored by the Sybase subagent.Typically, the subagent resides on the same machine as the monitored server. The *snmpagent.cfg* file contains documentation for configuration settings.

To test the Sybase subagent, you can start it from the command line by executing:

```
java -jar $SYBASE/SNMP-1_0/lib/SybaseAgent \
-c $SYBASE/SNMP-1_0/snmpagent.cfg
```

A log file is produced in the location specified in *snmpagent.cfg*, or in *./SybaseAgent.log* if a log file location was not specified.

Once the Sybase subagent is configured, you can set it up to automatically run at system start-up by moving the Sybase Agent folder to */Library/StartupItems*, as described in “Starting Sybase services automatically” on page 27.

MIB files

The *mibs* directory contains the MIB definitions that are supported by the Sybase subagent. Install these into your network management system. If you are going to use the SNMP command line tools that come with the Net-SNMP distribution, you must copy these *mibs* into */usr/share/snmp/mibs*. Once this is done, you can issue a test query:

```
setenv MIBS RDBMS-MIB
snmpwalk -nc public localhost
```

This command should walk through and return values for several MIBs including RDBMS-MIB. For more information on the SNMP command line tool issue man snmpwalk and man snmcmd.

Configuring trap generation from Adaptive Server

The Sybase subagent allows a Sybase server to generate a trap through a remote procedure call, sp_errornotify. When the remote procedure is called, a trap is generated containing the values in its parameters. sp_errornotify can be used from within any stored procedure. You may want, for example, to use this mechanism in the implementation of your sp_thresholdaction actions.

To use this:

- The Sybase SNMP agent contains an Open Server implementation. Add an entry for the Sybase SNMP agent to your *$SYBASE/interfaces* file. Use the rpcPort value you specified in *snmpagent.cfg* as its port address. The name of the server can be any valid server name.
- Add the Sybase subagent as a remote server to your Adaptive Server using sp_addserver. Use the same name you specified in the *interfaces* file entry. You can let the server type default to Adaptive Server.
- Enable cis rpc handling by running sp_configure, or issue the command set cis_rpc_handling prior to the procedure call.
- Issue the sp_errornotify procedure using this syntax:

```
<snmpsubagentname>...sp_errornotify

servername,errno,serverity,state,username,spid,
engine,msg

servername   - The name of the server (@@servername)
errno        - The error number (integer)
severity     - The error severity (integer)
state        - The error state (integer)
username     - Adaptive Server user name
spid         - Server process id (@@spid)
engine       - The engine number (integer)
msg          - The text of the error message
```

The values given are not validated by the SNMP agent, they are simply converted to variables to the sybRaiseError trap defined in SYBASE-MIB.

- The Sybase subagent maintains a table of the most recent 500 errors raised through sp_errornotify. These values can be retrieved from the aseErrorTable table definition in SYBASE-MIB.

Troubleshooting the installation

Please refer to the Release Bulletin for a complete list of known problems. If you cannot connect to the server, there are several things that you should check:

- On configurations that do not utilize a DNS server, some applications such as jISQL may have a problem connecting to a local server using the name 'localhost'. To work around this problem, enter '127.0.0.1' as the host name in the jISQL host name field. This issue is still under investigation.

  The Sybase installation process assumes the host name of your system is the same as returned by the shell command 'hostname -s'. This name is used in entries within the *interfaces* file.

- If you attempted the installation a second time, the installer indicates that your second attempt is an Upgrade, rather than a new Install. In this case, the server is not restarted after the installation or upgrade process is completed. To start the server, completely uninstall the software as described in the next section, and start over.

If these problems do not describe your situation, use our newsgroup to describe the problem and we will respond as soon as we can. Convey the following information in your problem description.

- System configuration – type of Apple computer, memory, disk space available, processor, DNS configuration.
- Problem description – be as concise as you can.
- Contents of */Applications/Sybase/ASE-12_5/install/<hostname>_ASE.log*.

Uninstalling Sybase software

To uninstall Sybase software, use the *uninstall* script in */Applications/Sybase/System/Install*.

Note This script removes everything in */Applications/Sybase*. Use it carefully.

If you have set up your system to automatically restart Sybase services, these *StartupItems* are also deleted. Finally, the receipt for the installation, found in */Library/Receipts* is removed.

uninstall requires a single argument, override, before it removes installation files. You must have superuser privileges to run *uninstall*.

```
sudo ./uninstall override
```

Further reading

All Sybase documentation is available online at http://sybooks.sybase.com. You can find Adaptive Server Enterprise 12.5 documentation at http://manuals.sybase.com/onlinebooks/group-as/asg1250e.

Suggested reading for first time users of Adaptive Server includes the *System Administration Guide* and the *Transact-SQL Users Guide*.

CHAPTER 2

Sybase Software Asset Management

This chapter describes important concepts regarding how to license optional Adaptive Server features, add new licenses to existing servers, set up the license manager in a network environment, and set up redundant servers for high availability and failover using Sybase Software Asset Management (SySAM).

You need to refer back to this chapter when you begin intalling Adapive Server in a network environment.

SySAM overview

SySAM is a licensing mechanism that:

- Provides System Administrators with a means to monitor their site's use of Sybase products and optional features.
- Enables select Adaptive Server optional features.
- Enables failover to other registered installations of Adaptive Server in the event of failure.

Adaptive Server base license

Adaptive Server can be licensed in one of three editions:

- Enterprise Edition
- Small Business Edition
- Developer's Edition

When Adaptive Server is initially installed on the Mac OS X platform it includes a Developer's Edition (ASE_DEV) license bundled with the software. This is true no matter which edition was purchased. The Developer's Edition of Adaptive Server has several limits on its use. For example, no more than one database engine and no more than 25 user connections.) However, it does enable all of the available optional non-royalty features. It is designed for a development environment. The Developer's Edition does not require a license daemon and no license keys need to be entered. When ready to deploy the application a Small Business or Enterprise license must be purchased.

The next step up is the Small Business Edition (ASE_SBE), which is designed for a small to mid-size business. There are limits on its use as well. For example, no more than four database engines and n o more than 250 users. In addition, some optional features (such as Distributed Transaction Management) are not available for the Small Business Edition. None of the optional features are enabled unless a separate license key is entered for the feature. If the Small Business Edition is what was purchased, then an ASE_SBE license key must be entered after the base Adaptive Server installation is complete. The Small Business Edition requires a license daemon.

The Enterprise Edition (ASE_SERVER) is the traditional high-end database server. There are no limits and all available optional features can be purchased for use. Like the Small Business Edition, the Enterprise Edition does not enable any optional features unless a separate license key has been entered for the feature. If the Enterprise Edition is what was purchased then an ASE_SERVER license key must be entered after the basic Adaptive Server installation is complete. The Enterprise Edition requires a license daemon

In summary, if what was purchased was the Developer's Edition, then nothing needs to be done with regard to license management. If a Small Business or Enterprise Edition was purchased, then a base server license must be entered (either ASE_SBE or ASE_SERVER) and then any optional feature license keys can be entered.

Adaptive Server check-out procedure

When you start Adaptive Server version 12.5, it attempts to locate the license file *license.dat* located in *$SYBASE/$SYBASE_SYSAM/licenses*. If the file does not exist, Adaptive Server looks for the license file specified in the environment variable LM_LICENSE_FILE.

For a Developer's Edition all that is in the license file is a Developer's Edition license key (ASE_DEV). The Adaptive Server examines the license and as long as it is valid continues starting. Because it is a Developer's Edition all optional non-royalty features are enabled.

For Small Business or Enterprise Edition the license file contains a pointer to the SySAM software on the primary server known as the **license host**, or to a remote license host where SySAM is running. SySAM consists of a utility, lmutil, to manage licensing activities, and two daemons – the license management daemon (lmgrd) and the vendor daemon (SYBASE). The daemons handle requests to check in or check out licensed features.

Using information in the license file, Adaptive Server connects to SySAM and attempts to check out a license (ASE_SERVER or ASE_SBE) for the base Adaptive Server product. If the ADE_SERVER or ASE_SBE license is checked out successfully, Adaptive Server continues to start and attempts to check out any optional features enabled in *server_name.cfg*.

Utilities

If Adaptive Server is configured to use optional features, such as External File Access (ASE_XFS) or Java in the database (ASE_JAVA), it attempts to check out licenses for those features during the start-up process. If a license is not available for an optional feature, Adaptive Server still starts, but the feature cannot be used.

Starting Adaptive Server with optional features

You can use sp_configure parameters to turn on or off optional features. The following parameters are used to configure optional features:

Table 2-1: Configuration parameters for optional features

Feature name	License name	Configuration parameter
Java in ASE	ASE_JAVA	enable java
External File System	ASE_XFS	enable file access

By default, the configuration parameters for optional features are set to 0 (off). To enable an optional feature use sp_configure to set its configuration parameter to 1, and restart Adaptive Server. Some features require additional preparation before you can use them. For more information see Table 2-1 and the *Configuration Guide*.

- For more information about Java in Adaptive Server, see *Java in Adaptive Server Enterprise*.
- For information on External File Access see *Component Integration Services User's Guide*.

Types of SySAM systems

The basic components of SySAM can be arranged for a standalone server, for a collection of servers on a network accessing a primary license host, and with multiple, redundant servers across a LAN or a WAN, and for backup and load balancing purposes. Depending on which instance of Adaptive Server (primary or secondary servers) you are installing, the procedures for registering licenses vary.

Standalone system In a standalone system, all of the SySAM components reside on a single machine. The license file points directly to the asset management software, which runs on the same machine. This machine is called the license host.

Network system In a network system, the license host runs SySAM, which handles check-in and check-out requests from all secondary servers.

The license file for secondary servers contain only pointers to the license host. Secondary servers check out licenses from the license host through the SySAM software.

Note If you are using a networked software asset management system, you must install the software on the license host before installing it on secondary servers.

Redundant servers As part of a failover plan or a load-balancing system, you can have multiple servers running on the same Adaptive Server configuration, using a redundant license across all servers. The redundant server system can be connected by a local-area network (LAN) or by a wide-area network (WAN). A redundant server system is an excellent load-balancing mechanism for physically distant servers. The redundant license allows you to specify local servers as the first in the queue, and make remote servers available as backup.

The SySAM application attempts to check out a license from a license-file list, starting with the first server. If that server fails for any reason, the second server in the list is contacted, and so on.

The redundant server system also provides failover protection. If one server in the list goes down for any reason, the second server responds to the license request. If that server fails too, the next server in the list is contacted, and so on.

SySAM in the network environment

Before you begin installing additional Adaptive Servers in a network system, the license manager must be installed and running on the license host. To install Adaptive Server on secondary servers, you need to know:

- The host name of the license host.
- The port number on the license host where the asset manager listens for connections (the default is 29722).

Redundant servers

As part of a failover plan or a load-balancing system, you may have multiple servers running the same Adaptive Server configuration, using redundant licenses across all servers. The redundant servers can be connected by LAN or by WAN.

To configure redundant servers:

1 Follow the instructions in this guide to install Adaptive Server on each of the servers in the redundant system.

2 As you install the software, make a note of the machine names and the dedicated port numbers that SySAM uses on each machine. The default port will be 29722.

3 For each machine in the redundant system enter the license information using the License Entry application. The certificate information is provided in you Adaptive Server package on a printed Sybase Software Asset Management Certificate.

4 After the installation is completed, and for each server in the redundant system, set the LM_LICENSE_FILE environment variable to:

```
"port@machine:port@machine:port@machine"
```

For example, if you use port 29722 on each machine and the machine names are Huey, Dewey, and Louie, the environment variable that points to the license file would look like this:

```
LM_LICENSE_FILE =
29722@huey:29722@dewey:29722@louie
```

The first server in the license list is the first server queued by the licensing software.

SySAM administration

If you are installing servers in a network environment, SySAM must be installed and running on the license host before installing Adaptive Server on additional servers. This section describes how to start SySAM manually or as an automatic service, and other SySAM administration information.

Verifying the software is running

When the lmgrd daemon starts, it automatically starts up the SYBASE daemon. To verify that the license management software is running on the system, use:

```
$SYBASE/SYBANE-1_0/bin/lmutil lmstat -c
```

Make sure that both lmgrd and SYBASE are running before you continue the installation or start Adaptive Server. If the SySAM software is not running, see the next section.

Starting the software manually

If the license manager is not running, you must start the license manager manually. Use the *startd.sh* script in the */bin* directory:

```
$SYBASE/$SYBASE_SYBASE/bin/startd.sh
```

Starting SySAM as an automatic service

To start the SySAM sofware automatically when the system is starting, see "Starting Sybase Services Automatically" in this document.

Adding feature licenses

This section describes how to update the license file to enable Adaptive Server features. To add features for which you have licenses follow the instructions under "Entering license keys" above. Because you are adding licenses to an existing configuration, you must notify the license daemons of the changes by issuing a reread command.

Run the license management utility lmutil lmreread from the *$SYBASE/$SYSAM/bin* directory:

```
$SYBASE/#SYBASE_SYSAM/bin/ lmutil lmreread
```

If you encounter problems with new licenses, check the *lmgrd.log* file in the *$SYBASE/SYBASE_SYSAM/log* directory.

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